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Defense Programs Business Practices Re-engineering QFD Exercise

Carol Murray, Laura Halbleib

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Abstract

The end of the cold war has resulted in many changes for the Nuclear Weapons Complex (NWC). We now work in a smaller complex, with reduced resources, a smaller stockpile, and no new phase 3 weapons development programs. This new environment demands that we re-evaluate the way we design and produce nuclear weapons. The Defense Program (DP) Business Practices Re-engineering activity was initiated to improve the design and production efficiency of the DP Sector. The activity had six goals:

1. to identify DP business practices that are exercised by the Product Realization Process (PRP);
2. to determine the impact (positive, negative, or none) of these practices on defined, prioritized customer criteria;
3. to identify business practices that are candidates for elimination or re-engineering;
4. to select two or three business practices for re-engineering;
5. to re-engineer the selected business practices; and
6. to exercise the re-engineered practices on three pilot development projects.

Business practices include technical and well as administrative procedures that are exercised by the PRP.

A QFD exercise was performed to address (1)- (4). The customer that identified, defined, and prioritized the criteria to rate the business practices was the Block Change Advisory Group. Five criteria were identified: cycle time, flexibility, cost, product performance/quality, and best practices. Forty-nine business practices were identified and rated per the criteria.

From this analysis, the group made preliminary recommendations as to which practices would be addressed in the re-engineering activity. Sixteen practices will be addressed in the re-engineering activity. These practices will then be piloted on three projects:

- the Electronic Component Assembly (ECA)/Radar Project,
- the B61 Mod 11, and
- Warhead Protection Program (WPP).

Executive Summary

The end of the cold war has resulted in many changes for the Nuclear Weapons Complex (NWC). We now work in a smaller complex, with reduced resources, a smaller stockpile, and no new phase 3 weapons development programs. This new environment demands that we re-evaluate the way we design and produce nuclear weapons. The Defense Program (DP) Business Practices Re-engineering activity was initiated to improve the design and production efficiency of the DP Sector. The activity had six goals:

1. to identify DP business practices that are exercised by the Product Realization Process (PRP);
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Business practices include technical and well as administrative procedures that are exercised by the PRP.

The DP Business Practices Quality Function Deployment (QFD) activity was developed to address the first four goals. This SAND report describes that QFD activity.

The QFD process consisted of the following steps:

1. Identify, prioritize, and define criteria for judging the impact of Business Practices on the PRP;
2. Identify, group, and define DP business practices;
3. Determine the impact of the business practices on the PRP using the criteria in (1); and
4. Based on impact, make recommendations on what business practices needed to be re-engineered or eliminated.

Step 1 was performed by the customer of the Re-engineering effort, the Block Change Advisory Group. We scheduled a four-hour meeting in which the Advisory Group identified, defined and prioritized the criteria to evaluate the DP business practices. Five criteria were identified. In addition, each business practice was to be evaluated against each criteria for the practice as an isolated process and as a part of the overall PRP. The Advisory Group separated individual practice performance from the performance of the practice in the overall PRP system to determine if practices were being optimized individually, at the expense of the overall PRP.

The remaining steps were completed by a group of 25 managers and staff representing the business practices exercised by the PRP. These representatives included personnel from Allied Signal-Kansas City (KCD) and Sandia National Laboratories, California and New Mexico. This group participated in a one week meeting in which they identified and defined

DP business practices, and evaluated those business practices against the Advisory Group's criteria. The practices were evaluated against the criteria using the Pugh Analysis technique.

From this analysis, the group made preliminary recommendations as to which practices would be addressed in the re-engineering activity. Sixteen practices will be addressed in the re-engineering activity. These practices will then be piloted on three projects:

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Introduction

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- the Electronic Component Assembly (ECA)/Radar Project,
- the B61 Mod 11, and
- Warhead Protection Program (WPP).

Step 1: Identifying, Defining, and Prioritizing Criteria

The criteria for evaluating DP business practices were developed in a four-hour meeting with the Block Change Advisory Group. The meeting was video-conferenced between Sandia California and New Mexico. The Advisory Group defined the purpose of the meeting: to establish criteria against which to measure the effectiveness of DP processes and practices. The group then brainstormed possible evaluation criteria. Using the affinity process, they grouped similar criteria into similar categories. Because the meeting was video-conferenced, California and New Mexico sites separately grouped the brainstormed criteria. The two sites then reported their results and reconciled differences. Five criteria were identified:

1. Cycle Time,
2. Flexibility,
3. Cost,
4. Product Performance/Quality, and
5. Best Practices.

For each of the criteria, definitions were developed. Finally the criteria were prioritized. The criteria, their definitions, and their priorities are given in Attachment 1. In addition, the group determined that each business should be evaluated against the criteria:

1. as an isolated practice or process separate from the PRP, and
2. as a part of the overall PRP.

In a separate meeting Carol Murray (SNL), Laura Halbleib (SNL), and Dom Palamara (KCD) did a preliminary evaluation of three business practices to determine if the criteria would be useful in rating PRP systems and procedures. For this preliminary evaluation, the following processes were used:

- Supplier Contracting (does not include supplier qualification);
- Concurrent Qualification (not the EP401100 procedure but the implementation of concurrent qualification); and
- the Engineering Release System (e.g., AER, IER, EER, QER, etc.).

The results of the preliminary evaluation are given in Table 1. The evaluation uses the Pugh Matrix scoring method. The Pugh Matrix scoring method is used to assess the negative and positive aspects of items being studied against some defined criteria. Each item is scored on a scale of -2 to +2 for each criteria. For example, Supplier Contracting was given a score of -2

against the cycle time criteria. This means, that for this example, Supplier Contracting has a strong negative impact on cycle time for the practice as an isolated activity and the practice's impact on the PRP as a system. In Pugh Matrix scoring:

- a -2 indicates a strong negative impact on the criteria;
- a -1 indicates that a practice has some negative impact;
- a 0 indicates that the process has no impact on that criteria;
- a +1 indicates some positive impact; and
- a +2 indicates a strong positive impact.

Each item is then scored by calculating its total positive and negative impact. The total negative impact is calculated by summing all negative Pugh scores. The total positive impact is calculated by summing all positive Pugh scores for each item. For example, the total negative impact of Concurrent Qualification as an individual practice is -2 (-1 + -1); its total positive impact is +4 (+2 + +2). Weighted totals may also be calculated. These weighted totals incorporate the priority rating for each criteria. Weighted negative and positive totals are calculated by taking the inner product of the negative or positive scores with the associated priority rating for the criteria. For example, Concurrent Qualification as an individual practice has a total negative weighted score of -8 (-1*5 + -1*3); its total positive weighted score is +14 (+2*2 + +2*5). Items with large negative scores are candidates for re-engineering.

Criteria (Priority)	Supplier Contracting		Concurrent Qualification		Engineering Release System	
	Ind	Sys	Ind	Sys	Ind	Sys
Product Quality (2)	-1	-1	+2	+1	-1	+1
Cycle Time (5)	-2	-2	-1	+2	-1	-1
Flexibility (5)	-2	-2	+2	+1	-2	0
Cost (3)	-2	-1	-1	+2	-2	-1
Best Practices (2)	-2	-2	0	-1	-2	0
Total Unweighted (+,-)	0, -9	0, -8	+4, -2	+6, -1	0, -8	+1, -2
Total Weighted (+,-)	0,-32	0,-19	+14,-8	+23,-2	0,-27	+2,-8

Table 1. Preliminary Evaluation

In this preliminary evaluation, the criteria appeared to work well in rating DP business practices. A decision was made to continue with the QFD process.

Step 2: Identify, Group, And Define DP Business Practices

The DP Business Practices QFD meeting was held October 2-6, 1995. The goal of the meeting was to complete steps 2 and 3 of the QFD process and to provide input to step 4. Attendees for the meeting are given in Attachment 2.

The attendees used the affinity process to brainstorm and group DP business practices. Several attempts at grouping brainstormed ideas were made. The number of attendees (28

total) and the number of brainstormed business practices (approximately 200) contributed to the difficulty in grouping the practices. Consequently, the affinity process took two days to complete. The attendees finally grouped business practices in a matrix format by:

- PRP Subprocess; and
- Practice Type.

The list of PRP Subprocesses were:

- Marketing/Demand Generation;
- Design/Product & Process Definition;
- Production Planning & Scheduling;
- Get Materials;
- Fabrication & Assembly;
- Certification and Delivery;
- Field Service; and
- Disposal.

The list of Practice Types were:

- Financial;
- Quality;
- Technical;
- Program Management;
- People;
- Strategic Planning;
- Information Systems; and
- Materials Management (including Procurement).

In addition, Legal and ES&H Practice Types were identified. However, there were no representatives for either of these types at the meeting. Therefore, these practices were not addressed.

Forty-nine business practices were identified. These business practices are given in Attachment 3 by PRP Subprocess and Practice Type. The attendees were then divided into teams to develop definitions for the business practices. Teams were organized by business practice type. Attendees were assigned to teams based on their expert knowledge of the business practice type. The teams and their members were:

- Financial (Elena Holland, Helen Finley, Jake Gonzales, and Brian Behling);
- Quality (Jay Templin, Carol Murray, and Laura Halbleib);
- Technical (Mark Retter, Jim Van DeVreugde, Tom Davis, Mike Orrell, and Bob Yuhas);
- Program Management (Jon Barnette, Bill Packer, Chuck Oien, John Lankford, and Kent Parsons);
- People and Strategic Planning (Gary Ferguson, Keith Ortiz, and Nancy Clark);
- Information Systems (Alec Willis, Margaret Olson, Karen Long, Bob Rieden, and Gary Laughlin); and
- Materials Management (Jerry Record and Dom Palamara).

Attachment 4 gives, for each business practice:

- its definition,
- the PRP subprocesses which utilize the practice,
- the business practice type, and
- what the practice includes and doesn't include (the scope of the business practice).

Step 3: Evaluate The Impact Of The Business Practices On The PRP Using The Advisory Group Criteria

The attendees then evaluated the business practices using the Advisory Group criteria. The Pugh Matrix scoring method described in Step 2 was used to score each practice. For each practice, weighted and unweighted totals for negative and positive values were calculated. High negative scores indicate that a practice might be a candidate for re-engineering.

Scoring for practices as independent processes was performed by the teams of knowledgeable experts. For example, scoring for all financial practices as independent processes was performed by the financial team. Scoring for impact on the overall PRP was done by individual attendees and then voted on as a group. The final overall PRP score for a particular practice and criteria was determined by a majority vote. Scores for practices as independent processes and overall impact on the PRP, and their totals are reported in Attachment 5.

Step 4: Make Recommendations On What Business Practices Need To Be Re-Engineered Or Eliminated

Once the scores were calculated for each practice, an analysis of the scores was performed. First, in reviewing the scores we noted that the individual and overall PRP scores did not differ greatly for each business practice. Second, the unweighted scores did not provide adequate differentiation between business practices to make decisions on what practices to re-engineer. Thus, we decided to use the negative weighted totals for the business practices as part of the overall PRP system for the final analysis.

A histogram of the negative weighted totals on the overall impact of the PRP for all business practices is given in Attachment 6. Five practices had a negative weighted score greater than or equal to 25. These practices were:

- Staffing of Projects;
- Traceability of Design Requirements and Intent, Rationale and Decisions, and Processes;
- Engineering Development;
- Material Acceptance; and
- Procurement.

In general, the attendees agreed that these practices were prime candidates for re-engineering. However some concerns were noted. First, some attendees expressed the concern that in re-engineering the identified business practices as separate from the overall PRP, these practices would be optimized individually, but could result in suboptimum performance of the overall

PRP. Second, attendees were concerned that any re-engineering effort that was not focused on the "worker bee" would not be successful. Third, the attendees were concerned that any teams assigned to re-engineer the selected business practices, would not have the authority to implement the new practices. Fourth, some attendees were concerned that any teams assigned to re-engineer the selected business practices would not dedicate the time required to complete the re-engineering effort. Finally , a previous study with goals similar to this QFD effort was performed on the Mark 5 Arming Fusing and Firing (AF&F). Some attendees were concerned that the results of this study would not incorporate the AF&F study. These concerns are address in the following section and Final Recommendations.

Reconciliation with Mk5 AF&F Characterization Work

This QFD presents a collective assessment of the appropriateness of various business practices for the future state described by the criteria. The participant population represents a broad spectrum of nuclear weapons components designers, systems engineers, and various support and administrative function. A comprehensive look of the W88 Mk 5 AF&F system and component development provides some comparable data from engineers associated with this discreet product realization which began with MCs/STS in December of 1983 and completed FPU in July 1998. This characterization study included a look at the schedule limiter/drivers to the W88, organizational relationships, things worth repeating, identifiable roadblocks to shorter cycle times, and the design teams' views on opportunities to shorten cycle time.

Some similarities and differences are noted when comparing the DP Business Practices QFD output and preliminary reports associated with the Mk 5 AF&F. Further review of the data generated in the QFD will be provided by the Mk 5 AF&F characterization team. It should also be noted that there were at least two participants common to each of these activities.

The following themes are common to the output of both activities:

1. A need to design with more margin.
2. A need for a network of suppliers approved for WR fabrication providing components which are well characterized at development.
3. A commercial components strategy is key.
4. Early involvement of the PA has not resulted in all the touted benefits of concurrent engineering. Specifically, production processing and producibility has not been impacted by early PA involvement. Including manufacturing engineering early may resolve this.
5. Subsystems are involved late; that is, after systems has committed to requirements.
6. The value of model-based design is questioned by the designers.
7. The designer viewpoint is that fewer development builds will result from
   - more concurrence and inclusion in the requirements process, and
   - solidification of requirements.
8. The QFD data shows procurement as a business practice in need of re-engineering. The Mk5 characterization reports, specifically those from radar and

stronglink indicate that when procurement was involved early the procurement process adequately supported product realization constraints. However, due to differences in procurement strategy between Sandia and KCD, the supplier selected in development often was not selected for procurement and this resulted in delays to the product realization cycle.

Items 2-8 will be addressed in the Final Recommendations.

Data Analysis

Tables 2 and 3 give summary statistics for the attendees scores for the weighted negative Pugh totals of the business practices impact on the overall PRP. Table 2 gives the average and standard deviation for the business practices with the top five most negatively weighted average scores on overall PRP impact. Table 3 gives the median and standard deviation for the business practices with the top five most negatively weighted median scores on overall PRP impact.

Business Practice	Mean	Standard Deviation
Procurement	-23.680	6.030
Traceability of Design Requirements	-18.050	11.830
Engineering Development	-17.820	10.350
Supplier Selection/Development	-16.730	8.410
Staffing for a Project	-16.230	10.360

Table 2.

Business Practices	Median	Standard Deviation
Procurement	-25.0	6.030
Traceability of Design Requirements	-21.0	11.830
Engineering Development	-19.0	10.350
Staffing for a Project	-17.5	10.360
Manage Product Definition Information	-16.0	7.660

Table 3.

Four business practices consistently received a higher negatively weighted score. The group scoring, the individual scoring median and mean scores listed the following four business practices with consistently high negative scores:

- Procurement,
- Traceability of Design Requirements,
- Engineering Development, and
- Staffing for a Project.

However, scores for three of these business practices also had high standard deviations. High standard deviations indicate that there is disagreement among the attendees' individual scores.

Final Recommendations

Three projects were chosen to address, as a minimum, the top 20% negatively scored business practices. Sixteen out of the 49 business practices will be reviewed within these three projects. In addition, the Mk 5 AF&F results were also considered when identifying these projects. The projects are summarized below.

Qualification Process Project

The objective of this project is to develop and document a qualification process and plan for the Electronic Component Assembly (ECA)/Radar development activity. This project is sponsored by the ECA and radar pilots. Jay Templin, 12336, lead this project. The re-engineering effort will address the following DP Business Practices:

- Supplier Development/Selection (-15),
- Supplier Certification/Qualification (-22),
- Product/Process Qualification (-8),
- Material Acceptance (-25),
- Supplier Management (-13),
- Receiving (-10),
- Procurement of WR Product (-27), and
- Assure Acceptable Material (-24).

Engineering Design Process Project

The objective of this project is to develop a detailed concurrent engineering development process flow for stockpile life extension programs. The B61 Mod 11 and the Warhead Protection Program (WPP) will pilot the outcome of this project, where appropriate. Mark Rosenthal, 5167, lead the project. Outcomes of this project are:

- a detailed structure to implement EP401099,
- early involvement and concurrent engineering techniques,
- links to requirements traceability and ER/CO,
- reductions in design build iterations, and
- a commercial component strategy.

This project is sponsored by the Business Practices project. The following DP business practices will be addressed:

- Engineering Development (-25),
- Conceptual Design (-12),
- Create Design Definition (-12),
- Production Readiness (-15),
- Identify and Secure Resources (-20), and
- Staffing of Projects (-30).

Engineering Information Systems Project

The objective of this project is to support the development of a detailed engineering information system architecture. The scope will include the product realization process from design through disposal.

Project leadership has not been determined. A proposal by Keith Johnstone is being considered. This project will be coordinated with the Taos Beer Group (TBG) to remove duplication of effort and produce a product useful to TBG.

This project will be sponsored by the Business Practices project. The following DP business practices will be included:

- ER/CO (-20), and
- Traceability of Design Requirements (-26).

Attachment 1: Block Change Advisory Group Criteria

Reduce Cycle Time (5)

Phase 1:

Concept through negotiated high-level DOE, DOD requirements with direction to proceed. (Goal of 6 month cycle time for Sandia driven practices.)

Includes:

Anticipate Customer Requirements

Rapid Requirements Negotiation

Phase 2:

Agree to high-level DOE/DOD requirements with direction to proceed (e.g. PCP) to FPU. (Current goal of 2 years with continuous improvement.)

Includes:

Eliminate superfluous signature

Repeatable, predictable stable processes

Efficient execution of contractual agreements

Encourage concurrence of overall process

Assure Flexibility (5)

Enable flexibility to respond to changing requirements and unpredicted problems (e.g. loss of a supplier, stockpile vulnerability, national emergency, changing technology, political environment, etc.)

Includes:

Flexibility to respond to unpredictable requirements

Rapidly formulate teams among complex and industrial partners

Rapid procurement and formation of partnerships

Ability to do cost performance tradeoffs early in PRP

Reduce Cost (3)

Reduce direct cost of practice. (Reducing by factor of 2 is the goal.) Leverage reduction of programmatic and project-related cost. (Degree of payoff. measure by impact to life Kyle cost.)

Includes:

Effective utilization of DOE human resources

Minimize Number of People

Reduce R&D Cost

Reduce Production

Reduce NWC Cost

Assure Product Performance/Quality (2)

Assure product conforms to performance and program requirements.

Includes:

Optimize for stockpile stewardship

Improve predictability of PRP

Best Practice(2)
Assure that the practice efficiently and effectively accomplishes what it is intended to do both as a practice and within a system.

Characteristics of a Good "System" of Practices

Includes:

Concurrence
Well defined
Easily Accessible
Consistent
Total Set Defined
Interoperability

Characteristics of "Individual" Practice

Includes:

Not Organizational Driven
Minimize interfaces
Flexibility to respond to unpredictability
Minimize Number of People
Minimize Process Steps
Minimize People who can say no
Predictable
No superfluous signatures
Implementable
Serve needs of People
Eliminate Duplication of effort
Value Added

Attachment 2: Attendees List

Name	Phone	Organization/Function	E-Mail
Karen Marlman	845-8201	12323/Facilitation Support	ksmarlm@sandia.gov
Dominick Palamara	816-997-4784	ASKCD/	
M. Helen Finley	845-8086	2600/	mhfinle@sandia.gov
Jake F Gonzales	845-8828	2402/	jfgonza@sandia.gov
Carol Murray	844-3611	14004	camurra@sandia.gov
Elena Holland	845-9597	2402/	meholla@sandia.gov
Margaret Olson	844-0870	2122/	meolson@sandia.gov
Brian Behling	845-9603	2702/	bjbehli@sandia.gov
Gary Laughlin	844-2787	2503/	gllaugh@sandia.gov
Mark Retter	844-2790	5122/	mjretter@sandia.gov
Nancy Clark	845-8050	2522/	nhclark@sandia.gov
Jay Templin	844-2129	12336/DP Quality	
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Keith Ortiz	844-2072	5102/	

Attachment 3: Business Practices by PRP Subprocess and Practice Type

Practice Type	Marketing	Design	PP&S	Get Materials	Fabrication	Delivery	Field Service	Disposal
Financial	Acq Funding	Cost Collection						
	Plng to Spend							Case Closing
Quality	Product/Process Qualification							
		Supplier Certification/Qualification						
				Non-conforming Matl Disp				
				Material Acceptance				
					Process Control			
					Product Acceptance & Delivery			
					Calibration			
Program Mgmt	Assure Total Customer Satisfaction							
		Id & Secure Resources	Dev Plan/Sched for Delivery	Assure Acc Matls Avail				
People	Performance Management Process							
	Training for Product Realization Process							
	Staffing Projects							
	Team Operations							
	Team Building							
Strategic Plng	Strategic Plng							
Technical	Id Nuclear Stockpile Needs	Supplier Dev/ Selection						
	Negotiate Customer Rqmts							
		Conceptual Des						
		Eng Feasibility						
		Eng Develop						
		Create Des Defn						
		Production Readiness			Production		Stockpile Stewardship	
Info Systems	Manage PRP Communication System							
	Engineering Release & Change Order Process							
	Manage Archived Information							
	Generation & Maintenance of Product & Process Flow Diagrams							
	Traceability of Design Requirements and Intent, Rationale and Decisions, and Processes							
	Accessing Official Policies/Procedures form Associated Production & Design Environments, Internal & External							
	Project Management Information Process							
		Manage Product Defn in Dev	Production Planning & Scheduling and Shop Floor Planning					
						QC Data		Dismantle DB
Matls Mgmt			Supplier Management					
			Open Rqts Sch	Procurement	Internal Trans			
				Receiving				
				Bonded Stores		Shipping		

Attachment 4: Business Practice Definitions

Business Practice: Acquiring Funding	
Definition (25 words or less): Process of acquiring DP funding. (Note: Demand generation is a continuous process; i.e., funds may come from an existing project/program.)	
PRP Subprocesses: Marketing/Demand Generation	
Business Practice Type: Financial	
Includes: Proposal Process Tech Transfer & Commercialization CRADA ICOs into SNL	**Doesn't Include:** Spending $ acquired from sponsors LDRD $

Business Practice: Planning to Spend	
Definition (25 words or less): The process of planning to spend $ on your DP project. Begins with FIN Plan $ in house(MIPR,B&R Line Item #, etc.) Ends with approval of Program/Project from Program Manager.	
PRP Subprocesses: Marketing/Demand Generation, Design/Product & Process Definition	
Business Practice : Financial	
Includes: Case Authorization form (open case) Case Status Update Spend Plan Input (reflect. of Project Plan) Capital Equipment Requirements Subscriptions of Service Centers Facility Mod. to accommodate. project work	**Doesn't Include:** Project Planning

Business Practice: Cost Collection	
Definition (25 words or less): The process of collecting, managing, theoretically controlling, reporting, & tracking project costs.	
PRP Subprocesses: All except Marketing/Demand Generation	
Business Practice Type : Financial	
Includes: Labor Charges Direct Charges Service Center Charges Capital Equipment Charges Controlling & Monitoring of Costs Reporting Costs: Std & Ad Hoc	**Doesn't Include:**

Business Practice: Case Closing	
Definition (25 words or less): The process of closing out cases, stopping costs and stopping reporting of these costs. Begins with completion of project. Ends with "the wake".	
PRP Subprocesses: Disposal (completion/delivery)	
Business Practice Type: Financial	
Includes: Reclasses of POs, SOs ICTs of timecards, travel vouchers, other Reconciliation of variances	**Doesn't Include:**

Business Practice: Supplier Development/Selection	
Definition (25 words or less): Determine if a supplier is capable of producing a product to meet design requirements including commercial suppliers where possible.	
PRP Subprocesses: Design/Product & Process Definition	
Business Practice Type: Technical Procedure	
Includes: Process Characterization Process Development Relationship Development Technology Transfer (Bilateral) Commercial Parts Selection	**Doesn't Include:** Supplier Certification/Qualification Supplier Management

Business Practice: Identify Nuclear Stockpile Needs & Issues with DOD Customers	
Definition (25 words or less): Identify needs & issues with nuclear stockpile; Develop plan to address issues & concerns; Convince customer of needs & plan viability; Begin detailed requirement negotiation with customer. Begins with identifying need. Ed with customer requirements.	
PRP Subprocesses: Marketing/Demand Generation	
Business Practice Type: Technical Procedure	
Includes: High degree of customer interactions Strategic Considerations Scope of Work	**Doesn't Include:** Firm Requirements Defn Significant Concurrent Eng. Tactical Considerations Disposition Planning

Business Practice: Negotiating Customer/Supplier Requirements	
Definition (25 words or less): The process of understanding what the product to be delivered must do. Begins with Phase 1 authorization letter and ends with requirements document, STS	
PRP Subprocesses: Marketing/Demand Generation, Design/Product & Process Definition	
Business Practice Type: Technical Procedure	
Includes: Documenting and recording the military characteristics, STS, CRL, traceability of requirements; ICD's (living documents)	**Doesn't Include:** Design definition, i.e., ML's, AY's, PS's, etc.

Business Practice: Creating Design Definition	
Definition (25 words or less): Creating product files which describes the design. Begins with MC or CRL and ends with CER.	
PRP Subprocesses: Design/Product & Process Definition	
Business Practice Type: Technical Procedure	
Includes: Drawing specifications, i.e., ML's, AY's, PS's, CK's, CD's, SS's, etc.	**Doesn't Include:** MC, STS, ICD, CDR, CRL

Business Practice: Conceptual Design	
Definition (25 words or less): Creating a preliminary concept based on requirements. Begins with customer requirements and ends with conceptual design.	
PRP Subprocesses: Design/Product & Process Definition	
Business Practice Type: Technical Procedure	
Includes: Design layouts, margin analysis, CDR's, Concepts using commercial product in Phase 1 final report	**Doesn't Include:** Formal drawing or testing

Business Practice: Engineering Feasibility Study	
Definition (25 words or less): Prove initial design ideas meet basic requirements. Begins with conceptual design review and ends with "prototype design review". Phase 2 final report.	
PRP Subprocesses: Design/Product & Process Definition	
Business Practice Type: Technical Procedure	
Includes: System design layouts, modeling, some fab., preproduction discussions, reliability assessments, nuclear safety, prod. process capability, prelim. cost estimates (Phase 2A)	**Doesn't Include:** Production Fabrication, formal engineering release.

Business Practice: Engineering Development	
Definition (25 words or less): Creating a documented and tested design with fabricated hardware. Systems Phase 3 authorization. Begins with Component Request Letter (CRL) and ends with prototype hardware.	
PRP Subprocesses: Design/Product & Process Definition	
Business Practice Type: Technical Procedure	
Includes: Iterating design, testing, model feedback, special processes char., tester/ gage dev., prod. budgets, ID long lead items, supplier qualification, production process selection, MRS.	**Doesn't Include:** WR Production

Business Practice: Production Readiness	
Definition (25 words or less): The combined effort of the DA/PA to provide an atmosphere for WR production. Begins with CDR and ends with QER/CER.	
PRP Subprocesses: Design/Product & Process Definition, Get Materials, Production Plng & Sched	
Business Practice Type: Technical Procedure	
Includes: Production readiness review, process prove in, manufacturing documentation, EQ's, DOE money committed.	**Doesn't Include:** WR production.

Business Practice: Production	
Definition (25 words or less): Procurement and fabrication of WR product per directed schedules. Begins CER and ends with DOE acceptance.	
PRP Subprocesses: Fabrication & Assembly	
Business Practice Type: Technical Procedure	
Includes: Process control rework, inspection SXR's SIER's, production management, quality assurance, SPC, D-testing, assembly	**Doesn't Include:** Development hardware Spec test hardware

Business Practice: Stockpile Stewardship	
Definition (25 words or less): The responsibility to evaluate, maintain, and/or upgrade the stockpile. Begins IOC and ends with disposition.	
PRP Subprocesses: Field Service, Disposal	
Business Practice Type: Technical Procedure	
Includes: Field retrofits, surveillance, dismantlement, disposal, LLCE's, military liaison	**Doesn't Include:** Feedback to Demand Gen. Phase 2 Feedback to components

Business Practice: Identifying and Securing Resources	
Definition (25 words or less): Identify resources; Negotiate priorities/set up teams. Begins with customer commitment. Ends with team authorized.	
PRP Subprocesses: Design/Product & Process Definition	
Business Practice Type: Program Management	
Includes: Acquiring Commitments from resource providers	**Doesn't Include:** Product Realization Activities Disposition Planning

Business Practice: Develop Plan/Schedule for Product Delivery	
Definition (25 words or less): Identify milestones/"external" deliverables; Identify WBS; Contingency planning (risk mitigation); Identify intra project deliverables. Begins with team authorization. Ends with agreement on plan detail.	
PRP Subprocesses: Planning/Scheduling	
Business Practice Type: Program Management	
Includes: See definition	**Doesn't Include:** Fully integrated plan across DA/PA Formal risk mgmt Technology constraints Disposition planning Consistent approach to concurrent engineering

Business Practice: Assure Acceptable Materials/Components Available As Needed	
Definition (25 words or less): Resolve make/buy issues; Oversee development of alternate vendors as required; Monitor.	
PRP Subprocesses: Getting Materials	
Business Practice Type: Program Management	
Includes: DA/PA redundancy of effort	**Doesn't Include:** Coordinated DA (Development)/PA (Production) material/parts acquisition

Business Practice: Assure Total Customer Satisfaction.	
Definition (25 words or less): Monitor cost/performance schedule; Mgmt Priorities; Change Mgmt. Begins with demand generation - phase 3 FPU. Ends with last delivered product - phase 6 last delivery.	
PRP Subprocesses: All	
Business Practice Type: Program Management	
Includes: Oversight of ALL aspects of project to assure customer satisfaction	**Doesn't Include:** Disposition planning

Business Practice: Open Requirements Scheduling	
Definition (25 words or less): Provides a master schedule for the needs for all products that are part of a project or program through all levels of assembly. Begins with a customer order and ends with requisitions for purchased products and schedules for build products.	
PRP Subprocesses: Production Planning & Scheduling	
Business Practice Type: Materials Management	
Includes: PRT SNL PP&S SNL Open Requirements at KCP	**Doesn't Include:**

Business Practice: Procurement (Acquisition)	
Definition (25 words or less): Process starts with the SOW (Requisition) and ends with receipt of material by user/receiving function.	
PRP Subprocesses: Get Material	
Business Practice Type: Materials Management	
Includes: Cost estimates RFQ Contract negotiations P.O./Contract issues Assurance of supply (strategy)	**Doesn't Include:** SOW/Product definition Quality Reqmts. Funding

Business Practice: Receiving	
Definition (25 words or less): Documentation of receipt of material, inspection of quality reqmts. non-conforming material control and priority setting. Begins with receipt of materials and ends with delivering acceptable material to stores.	
PRP Subprocesses: Get Materials	
Business Practice Type: Materials Management	
Includes: Receiving inspection Non-conforming material disposition Setting of priorities	**Doesn't Include:**

Business Practice: Bonded Stores	
Definition (25 words or less): Limited access area for controlling and storing material. Begins with receipt of material from recovery. Ends with delivery of material to a user.	
PRP Subprocesses: Get Materials, Fabrication & Assembly	
Business Practice Type: Materials Management	
Includes: Inventory control Special environmental shelf life monitoring May include automated retrieval	**Doesn't Include:** Work-in-progress status

Business Practice: Shipping	
Definition (25 words or less): The practice of preparing material for shipping to the customer. Begins with receipt of materials required to satisfy customer orders. Ends with shipment and delivery of material to the customer.	
PRP Subprocesses: Certify and Deliver	
Business Practice Type: Materials Management	
Includes: Packing Document preparation Labeling Deliver to carrier	**Doesn't Include:**

Business Practice: Supplier Management (SQP)	
Definition (25 words or less): Process of establishing and monitoring known suppliers for providing required materials.	
PRP Subprocesses: Production Planning & Scheduling, Get Materials, Production	
Business Practice Type: Materials Management	
Includes: Supplier Performance Evaluations Approved supplier list (B-items) (CASL)	**Doesn't Include:** Supplier Development/Selection Supplier Certification/Qualification

Business Practice: Internal Transportation	
Definition (25 words or less): Internal movement of material to using groups.	
PRP Subprocesses: Fabrication & Assembly	
Business Practice Type: Materials Management	
Includes: Movement within location (between buildings or across buildings)	**Doesn't Include:**

Business Practice: Product/ Process Qualification	
Definition (25 words or less): The process of assuring that product and all associated process are capable of meeting customer requirements. Begins with requirement verification. Ends with reqmt. validation	
PRP Subprocesses: All	
Business Practice Type: Quality	
Includes: EP401401 EP401100 M&TE Eq Defining software Qualification criteria Customer Reqmts	**Doesn't Include:** EP401011 Supplier Qualification

Business Practice: Nonconforming Material Disposition	
Definition (25 words or less): The process of disposition and corrective action associated with nonconforming material. Begins with documentation of product not meeting reqmts. Ends with reinstatement of product into production flow.	
PRP Subprocesses: Get Material, Fabrication & Assembly	
Business Practice Type: Quality	
Includes: SXR Corrective action Disposition ACO	**Doesn't Include:** Inspection

Business Practice: Process Control	
Definition (25 words or less): The process of assuring manufacturing process stability. Begins with determining criticality of processes. Ends with a stable process.	
PRP Subprocesses: Fabrication & Assembly	
Business Practice Type: Quality	
Includes: Capability studies Corrective action Control charts Inspection Preventive maintenance Input phase output variable	**Doesn't Include:** Inspection for product acceptance Calibration

Business Practice: Product Acceptance and Delivery	
Definition (25 words or less): The process of assuring and providing quality evidence that the product has met specified reqmts. Begins with defining product acceptance criteria. Ends with DOE QAIP.	
PRP Subprocesses: Fabrication & Assembly, Certification & Delivery	
Business Practice Type: Quality	
Includes: Defining product acc criteria Quality data package QAIP Source acceptance (EP401413)	**Doesn't Include:** Material acceptance

Business Practice: Material Acceptance	
Definition (25 words or less): The process of assuring and providing quality evidence that material/piece parts have met specified reqmts. The process begins with identification of incoming acceptance criteria. Ends with quality acceptance of material/piece parts.	
PRP Subprocesses: Get Materials, Fabrication & Assembly	
Business Practice Type: Quality	
Includes: Materials, Piece parts, Source Acceptance (EP401410) PMQP's/II's Defining material/piece parts acceptance criteria	**Doesn't Include:** Product Acceptance

Business Practice: Calibration	
Definition (25 words or less): The process of assuring the accuracy of equipment. Begins with identification of equipment in a recall system and ends with released calibration of equipment back to operations.	
PRP Subprocesses: Design/Product & Process Definition, Get Materials, Fabrication & Assembly, Field Service, Disposal	
Business Practice Type: Quality	
Includes: EP401560 SLP1053 Recall System (notification of users of out of cal. eq.)	**Doesn't Include:** Qualification of Eq Maintenance of Eq.

Business Practice: Supplier Certification/Qualification	
Definition (25 words or less): The process of determining that a supplier is capable of providing product within specified limits. Certification is based on evaluation of the supplier quality mgmt system and technical processes. Begins with identifying a potential supplier. Ends with the results of evaluation.	
PRP Subprocesses: Design/Product & Process Definition, Get Materials, Fabrication & Assembly	
Business Practice Type: Quality	
Includes: MDE Project Mgmt Template EP401408 EP401418 RP401412 EP401563 Report	**Doesn't Include:** Incoming/Product Acceptance Expiration Supplier Development/Selection Supplier Management

Business Practice: Performance Management Process	
Definition (25 words or less): The process attempts to provide expectations for individuals for the coming year, rate the results and provide input to the compensation process.	
PRP Subprocesses: All	
Business Practice Type: People	
Includes: Expectations Work Approaches Assignments	**Doesn't Include:** A clear connection to compensation or other rewards or recognition A provision to clearly _____ teamwork

Business Practice:	
Training for Product Realization Process	
Definition (25 words or less):	
The process of training begins with identification of a need, the development of instruction material, finding teachers, conducting classes or OJT and measuring the impact.	
PRP Subprocesses:	
All	
Business Practice Type: People	
Includes:	**Doesn't Include:**
Currently training includes on site, University programs, INTEC, short courses etc. Production Training per QC-1	Formal OJT system

Business Practice:	
Staffing Projects (Getting Right People, Right Place, Right Time)	
Definition (25 words or less):	
Begins with project authorization and funding. Ends with a completion and staff movement, re-assignment or a new project.	
PRP Subprocesses:	
All	
Business Practice Type: People	
Includes:	**Doesn't Include:**
Matrix support Postings Direct transfers New Hires Loans of people Residuals	Consistent Co-location (systems orgs do better) Virtual co-location Electronic fast response Team building

Business Practice:	
Team Building	
Definition (25 words or less):	
Begins with the recognition that a team is needed for the job. Ends when a high performing team is operational.	
PRP Subprocesses:	
All	
Business Practice Type: People	
Includes:	**Doesn't Include:**
Forming, norming, storming, and performing Continued team building	Staffing Formal training, today

Business Practice:	
Team Operation	
Definition (25 words or less):	
Begins after formation. Ends when the job is done.	
PRP Subprocesses:	
All	
Business Practice Type: People	
Includes:	**Doesn't Include:**
Continuity	Formation
Performance	Team building
Common vision	Staffing
Communications	Training

Business Practice:	
Strategic Planning	
Definition (25 words or less):	
Generates longer range organization of mission, vision, values and objectives in response to Leadership, Environmental scans, Current strengths/weaknesses strategic partners and customer expectations.	
PRP Subprocesses:	
Marketing/Demand Generation	
Business Practice Type: Strategic Planning	
Includes:	**Doesn't Include:**
Team building as part of process	Operational Planning
Long term perspective	Program/Project Planning
	Resource Mgmt

Business Practice:	
Manage PRP Communication System	
Definition (25 words or less):	
The process of managing the PRP communications system begins with establishing and maintaining a reliable enterprise network and ends with deploying and supporting communications tools at the desktop. The as-is PRP communications capabilities are not integrated and managed as a system, but rather as a collection of organizationally and financially independent entities including production agency. Each organization makes decision based on local optimization. The creation of the CIO has started the integration effort, but much work remains.	
PRP Subprocesses:	
All	
Business Practice Type: Information System	
Includes:	**Doesn't Include:**
Networks (classified, unclassified),	Function specific s/w (electrical and mechanical
security h/w,s/w and plans,	applications, etc.),
collaborative environments,	telephones,
email, office automation,	FAX machines
internal & external connectivity,	
access to corporate systems,	
SNLmail	

Business Practice: Manage Product Definition and Process Information During Development	
Definition (25 words or less): The management of product definition and process information begins with conceptual design (requirements) and ends with formal approval and release to the archival system. Manage includes capture, store, retrieve, route. Engineering defines read/write privileges.	
PRP Subprocesses: Design/Product & Process Definition	
Business Practice Type: Information System	
Includes: product definition, process information, design tools, visualization & simulation tools, managing work in progress information, configuration management of data, assembly planning	**Doesn't Include:** MRP tools, project management tools, ER system

Business Practice: Engineering Release and Change Order Process	
Definition (25 words or less): The Engineering Release and Change Order Process begins with the initiation of the formal release of a drawing, document, etc. and ends with inputting the released information and the associated ER or CO into the current "Configuration Management System" and the "Image Management System." The information is also distributed to whoever needs it, including the DOE complex for production and outside suppliers.	
PRP Subprocesses: All	
Business Practice Type: Information System	
Includes: release procedures (EP401xxx), configuration management of released information	**Doesn't Include:** archival procedures, management of the archived information

Business Practice: Manage Archived Information	
Definition (25 words or less): The management of archived information begins with the release of information to the appropriate archival system and ends in accordance with established records retention schedules.	
PRP Subprocesses: All	
Business Practice Type: Information System	
Includes: storage and retrieval, configuration management of archived information, current systems include: IMS, CMS, ROA, PTD, Specifications, Film bank, etc.	**Doesn't Include:**

Business Practice: Generation and Maintenance of Product and Process Flow Diagrams	
Definition (25 words or less): This process begins with product and process definition generation and ends with release to archival system. It defines and provides a record of the product hierarchical design tree and associated manufacturing process flows.	
PRP Subprocesses: All	
Business Practice Type: Information System	
Includes: Travelers, BOMs, OPs, product top-down BOM, CMS, MLs, PXs	**Doesn't Include:**

Business Practice: Traceability of Design Requirements and Intent, Rationale and Decisions, and Processes	
Definition (25 words or less): The current process is a people intensive search through individual, organizational and corporate databases, as well as pick your brain discussions and speculation. A systematic approach including an accessible knowledge base does not exist and is desperately needed.	
PRP Subprocesses: All	
Business Practice Type: Information System	
Includes: top down and bottom up requirements traceability, CDRs, CDs, STS, MCs, CTF	**Doesn't Include:**

Business Practice: Accessing Official Policies/Procedures From Associated Production And Design Environments, Internal And External.	
Definition (25 words or less): This process involves enabling electronic access at the desktops to official policies and procedures associated with product realization.	
PRP Subprocesses: All	
Business Practice Type: Information System	
Includes: KCD Command Media, Sandia EVE and Policy Media, SAROS	**Doesn't Include:**

Business Practice: Project Management Information Process	
Definition (25 words or less): The project management information process begins with scoping the project followed by the preparation of schedules, budgets, work break down schedules, identification of required resources, etc. This information continues to be updated and tracked through the life of the project.	
PRP Subprocesses: All	
Business Practice Type: Information System	
Includes: Project planning tools (PDI, uS, etc), budget, work breakdown schedules, etc.	**Doesn't Include:** Production planning and scheduling, shop floor planning

Business Practice: Production Planning And Scheduling And Shop Floor Planning	
Definition (25 words or less): This process begins with migrating the product definition into manufacturing and ends with detailed scheduling of manufacturing systems and processes.	
PRP Subprocesses: Planning and Scheduling, Get Materials, Fabrication & Assembly, Certification and Delivery	
Business Practice Type: Information System	
Includes: MRP, shop floor planning and control, build schedules, customer requirements, etc.	**Doesn't Include:** Product design and process development projects

Business Practice: Preparation and Maintenance of Dismantlement Database	
Definition (25 words or less): This process begins with accessing, extracting, and compiling information from databases on product definition, process and materials specifications, product and process flow charts and information models and ends with database maintenance of dismantlement information.	
PRP Subprocesses: Disposal	
Business Practice Type: Information System	
Includes: product definition by suffix with associated material and process information	**Doesn't Include:** process material consumed that could have an effect but not specified in product definition process material consumed that could have an effect but not specified in product definition

Business Practice: Collecting and Assembling QC Data	
Definition (25 words or less): This process begins with collecting QC data and ends with assembling the data in a managed database. This database provides the information used to support the preparation of the certificate of compliance.	
PRP Subprocesses: Certify and Deliver	
Business Practice Type: Information System	
Includes: all information collected during fabrication and certification process required by product acceptance specifications and process engineering requirements, tester data, PTD system, ROAs, VADA, legacy PTD systems, etc.	**Doesn't Include:**

Attachment 5: Pugh Scores for Business Practices as Individual Processes and for Impact on Entire PRP Process

Business Practice	Individual													
	CT		Flex		Cost		PQ		Best		WT	WT	Tot	Tot
	+	-	+	-	+	-	+	-	+	-	+	-	+	-
Internal Transportation		1									0	-5	0	-1
PRP Communication System		1				1		1			0	-10	0	-3
Manage Product Defn Info		2		1		1		1		1	0	-22	0	-6
ER & CO Process		2	1			1	1				7	-13	2	-3
Manage Archived Information	1				1					1	8	-2	2	-1
Generate & Maint Prod Info	2				2		1		2		22	0	7	0
Performance Mgmt Process		1		2						2	0	-19	0	-5
Trng for PRP		1		1			1			1	2	-12	1	-3
Staffing for Project		2		2		2	1			1	2	-28	1	-7
Team Building		1	1			2	1		1		9	-11	3	-3
Team Operations		2	1			1	1		1		9	-13	3	-3
Strategic Planning		2				1				1	0	-15	0	-4
Acquire Funding		1	1						1		7	-5	2	-1
Planning to Spend		1	1							1	5	-7	1	-2
Cost Collection				2		1				2	0	-17	0	-5
Case Closing				1						1	0	-7	0	-2
Id Nuclear Stockpile Needs			2			1		1		2	10	-9	2	-4
Id & Secure Resources		2		2		2				1	0	-28	0	-7
Traceability of Design Rqmts		2		2		2		2		2	0	-34	0	-10
Access to Official Policies/Proc	1		1		1		1		1		17	0	5	0
Project Management Info		1		1		2		1		2	0	-22	0	-7
PP&S SFC		1		1		1				1	0	-15	0	-4
Maint of Dismantlement		1				2	1				2	-11	1	-3
QC Database		1		1		2				2	0	-20	0	-6
Supplier Certification		2		1		2				2	0	-25	0	-7
Calibration		1		1		1					0	-13	0	-3
Material Acceptance		2		1		2	1			2	2	-25	1	-7
Product Acceptance		1		1		1	1			2	2	-17	1	-5
Process Control		1	1			1	2		1		11	-8	4	-2
Non-Conf Matl Disposition		1		2		1	2				4	-18	2	-4
Develop Plan/Sched		1		1		1				2	0	-17	0	-5
Assure Acc Matls		2		2		2		2		2	0	-34	0	-10
Assure Total Customer Sat	1		1			1	1			1	12	-5	3	-2
Negotiate Cust/Sup Rqmts		2		1				1			0	-17	0	-4
Create Design Defn		2	2			2		1		1	10	-20	2	-6
Conceptual Design		2	1					2		1	5	-16	1	-5

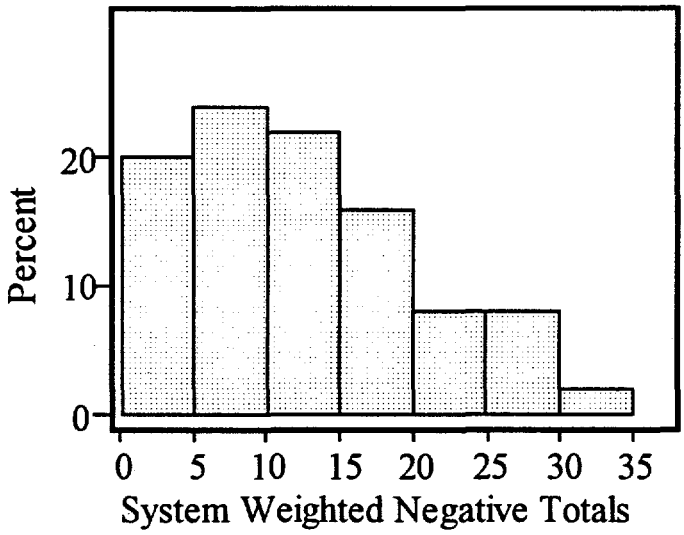
Business Practice	Individual (Continued)													
	CT		Flex		Cost		PQ		Best		WT	WT	Tot	Tot
	+	-	+	-	+	-	+	-	+	-	+	-	+	-
Engineering Feasibility Study		1						1		1	0	-9	0	-3
Engineering Development		2		2		2		2		2	0	-34	0	-10
Production Readiness		2				1	1			2	2	-17	1	-5
Production		1		1		1		1		1	0	-17	0	-5
Stockpile Stewardship		2				1		1		2	0	-19	0	-6
Open Rqmts Sched		1	1							1	5	-7	1	-2
Procurement		1		1						1	0	-12	0	-3
Receiving		2		1						1	0	-17	0	-4
Bonded Stores		1			1						3	-5	1	-1
Shipping		1			1						3	-5	1	-1
Supplier Selection		2	1			2				1	5	-18	1	-5
Supplier Mgmt		1		1				1		1	0	-14	0	-4
Product/Process Qualification		1	2			1	2				14	-8	4	-2

Business Practice	System													
	CT		Flex		Cost		PQ		Best		WT	WT	Tot	Tot
	+	-	+	-	+	-	+	-	+	-	+	-	+	-
Internal Transportation		1									0	-5	0	-1
PRP Communication System		1				1				1	0	-10	0	-3
Manage Product Defn Info		1		1		1		1		1	0	-17	0	-5
ER & CO Process		2		1		1	1			1	2	-20	1	-5
Manage Archived Information											0	0	0	0
Generate & Maint Prod Info		1				1				2	0	-12	0	-4
Performance Mgmt Process		1								2	0	-9	0	-3
Trng for PRP		1				1		1		1	0	-12	0	-4
Staffing for Project		2		2		2				2	0	-30	0	-8
Team Building		1								1	0	-7	0	-2
Team Operations		1									0	-5	0	-1
Strategic Planning		1								1	0	-7	0	-2
Acquire Funding		1		1						1	0	-12	0	-3
Planning to Spend		1				1				1	0	-10	0	-3
Cost Collection				2		1				2	0	-17	0	-5
Case Closing				1						1	0	-7	0	-2
Id Nuclear Stockpile Needs											0	0	0	0
Id & Secure Resources		2		1		1				1	0	-20	0	-5
Traceability of Design Rqmts		2		1		1		2		2	0	-26	0	-8

Business Practice	System (Continued)													
	CT		Flex		Cost		PQ		Best		WT	WT	Tot	Tot
	+	-	+	-	+	-	+	-	+	-	+	-	+	-
Access to Official Policies/Proc	1										5	0	1	0
Project Management Info		1				1				1	0	-10	0	-3
PP&S SFC						1					0	-3	0	-1
Maint of Dismantlement											0	0	0	0
QC Database		1		1		1					0	-13	0	-3
Supplier Certification		2		1		1				2	0	-22	0	-6
Calibration						1					0	-3	0	-1
Material Acceptance		2		1		2				2	0	-25	0	-7
Product Acceptance		1		1		1				1	0	-15	0	-4
Process Control		1								1	0	-7	0	-2
Non-Conf Matl Disposition		1		1		1				1	0	-15	0	-4
Develop Plan/Sched		1									0	-5	0	-1
Assure Acc Matls		2		1		1		1		2	0	-24	0	-7
Assure Total Customer Sat						1	1			1	2	-5	1	-2
Negotiate Cust/Sup Rqmts		1		1		1				1	0	-15	0	-4
Create Design Defn		1				1		1		1	0	-12	0	-4
Conceptual Design		1				1		1		1	0	-12	0	-4
Engineering Feasibility Study		1									0	-5	0	-1
Engineering Development		2		1		2		1		1	0	-25	0	-7
Production Readiness		1		1		1				1	0	-15	0	-4
Production		1		1		1				1	0	-15	0	-4
Stockpile Stewardship						1		1			0	-5	0	-2
Open Rqmts Sched											0	0	0	0
Procurement		2		2		1				2	0	-27	0	-7
Receiving		1		1							0	-10	0	-2
Bonded Stores											0	0	0	0
Shipping											0	0	0	0
Supplier Selection		2				1				1	0	-15	0	-4
Supplier Mgmt		1		1		1					0	-13	0	-3
Product/Process Qualification		1				1					0	-8	0	-2

Attachment 6: Histogram of Negative Weighted Totals for DP Business Practices

Business Practice	Neg Total
Staffing for Project	30
Procurement	27
Traceability of Design Rqmts	26
Material Acceptance	25
Engineering Development	25
Assure Acc Matls	24
Supplier Certification	22
ER & CO Process	20
Id & Secure Resources	20
Manage Product Defn Info	17
Cost Collection	17
Product Acceptance	15
Non-Conf Matl Disposition	15
Negotiate Cust/Sup Rqmts	15
Production Readiness	15
Production	15
Supplier Selection	15
QC Database	13
Supplier Mgmt	13
Generate & Maint Prod Info	12
Trng for PRP	12
Acquire Funding	12
Create Design Defn	12
Conceptual Design	12
PRP Communication System	10
Planning to Spend	10
Project Management Info	10
Receiving	10
Performance Mgmt Process	9
Product/Process Qualification	8
Team Building	7
Strategic Planning	7
Case Closing	7
Process Control	7
Internal Transportation	5
Team Operations	5
Develop Plan/Sched	5
Assure Total Customer Sat	5
Engineering Feasibility Study	5
Stockpile Stewardship	5
PP&S SFC	3
Calibration	3
Manage Archived Information	0
Id Nuclear Stockpile Needs	0
Access to Official Policies/Proc	0
Maint of Dismantlement	0
Open Rqmts Sched	0
Bonded Stores	0
Shipping	0



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